

REMARKS

This is a full and timely response to the outstanding final Office Action mailed April 7, 2003. Entry of the amendments together with reconsideration and allowance of the application and presently pending claims are respectfully requested.

Present Status of Patent Application

Claims 1-18 remain pending in the present application.

A. Examiner Interview

Applicants wish to express their sincere appreciation for the time that Examiner DiGrazio spent with Applicants' representative during a telephone discussion on June 3, 2003 regarding the outstanding Office Action. Applicants believe that certain important issues were identified during the telephone discussion, and that they are resolved herein.

During the conversation, the Examiner's grounds for rejecting claims 1 and 14 were discussed. Additionally, Applicants' proposed response to Examiner's rejection of claim 9 was also discussed.

B. Claim rejections – 35 U.S.C. §103(a)

Statement of the rejection

Claims 1, 14, and 15-18 have been rejected under 35 U.S.C. 103(a) as being unpatentable over Matsumoto (U.S. Patent No. 6,445,436B1) in view of Applicants' Prior Art Figure 1.

Claims 2, 3, 8, 9, 10, and 13 have been rejected under 35 U.S.C. 103(a) as being unpatentable over Matsumoto (U.S. Patent No. 6,445,436 B1) and Applicants' Prior Art Figure 1 in further view of Takiar (U.S. Patent No. 6,177,288 B1).

For a proper rejection under 35 U.S.C. §103(a), a combination of references must expressly or impliedly suggest all of the features of the claimed invention, *i.e.*, all of the features cited in the claims at issue. *In re Gorman*, 933 F.2d 982, 18 USPQ 1885 (Fed. Cir. 1991). Hindsight reconstruction is impermissible. *See, e.g., Vas-Cath, Inc. v. Mahurkar*, 935 F.2d 1555, 19 USPQ2d 1111 (Fed. Cir. 1991). Further, “[t]he mere fact that the prior art may be modified in the manner suggested by the Examiner does not

make the modification obvious unless the prior art suggested the desirability of the modification." *In re Fritch*, 972 F.2d 1260, 1266, 23 U.S.P.Q.2d 1780 (Fed Cir. 1992).

Indeed, it is well settled law that in order to properly support an obviousness rejection under 35 U.S.C. § 103(a), there must have been some teaching in the prior art to suggest to one of ordinary skill in the art to combine the cited references to arrive at the claimed invention. *W. L. Gore & Associates, Inc. v. Garlock, Inc.*, 721 F.2d 1540, 1551 (Fed. Cir. 1983). More significantly,

"The consistent criteria for determination of obviousness is whether the prior art would have suggested to one of ordinary skill in the art that this [invention] should be carried out and would have a reasonable likelihood of success, viewed in light of the prior art. ... Both the suggestion and the expectation of success must be founded in the prior art, not in the applicant's disclosure... In determining whether such a suggestion can fairly be gleaned from the prior art, the full field of the invention must be considered; for the person of ordinary skill in the art is charged with knowledge of the entire body of technological literature, including that which might lead away from the claimed invention."

(*Emphasis added*) *In re Dow Chemical Co.*, 837 F.2d 469, 473 (Fed. Cir. 1988).

In this regard, Applicants note that there must not only be a suggestion to combine the functional or operational aspects of the combined references, but that the Federal Circuit also requires the prior art to suggest both the combination of elements and the structure resulting from the combination. *Stiftung v. Renishaw PLC*, 945 F.2d 1173 (Fed. Cir. 1991). Therefore, in order to sustain an obviousness rejection based upon a combination of any two or more prior art references, the prior art must properly suggest the desirability of combining the particular elements.

Response to the rejection

Claim 1

Claim 1, which recites a method of manufacturing a plurality of liquid crystal micro displays (lcmds), has been rejected under 35 U.S.C. 103(a) as being unpatentable over Matsumoto (U.S. Patent No. 6,445,436B1) in view of Applicants' Prior Art Figure 1. Applicants' traverse the rejection of claim 1.

For convenience of analysis, Applicants' independent claim 1 is repeated below in its entirety.

1. (Currently Amended) A method of manufacturing a plurality of liquid crystal micro displays (lcmds), said method comprising:
providing a substrate having the plurality of lcmds interconnected to one another;

creating a plurality of holes in a the substrate, wherein each of the plurality of holes corresponds to one of the plurality of lcmds, extends through the substrate from a major surface thereof into a respective one of the lcmds; causing liquid crystal material to flow through said plurality of holes, and to fill spaces within said plurality of lcmds; and sealing said plurality of holes.

(Applicants' claim 1 – emphasis added)

In rejecting claim 1, the Office Action states, in pertinent part, that "Matsumoto has: a plurality of holes in a substrate (Figure 1 and Col. 5, Lines 56-58). Matsumoto has a liquid crystal hole of each one of a multiplicity of liquid crystal cells where liquid crystal injection has been completed (Col. 5, Lines 11-13)."

Attention is drawn to Matsumoto (Col. 1, Lines 29-33) which states "In a part of the crystal cell 21, *a crystal injection hole 21a* is created by, for example, *creating a part that the sealing material does not coat* in the sealing material coating step." (Emphasis Added). Additionally, all Matsumoto figures (except Figure 11, which does not include hole 21a), as well as the detailed description, also show *crystal injection hole 21a* as "created by, for example, *creating a part that the sealing material does not coat* in the sealing material coating step." (Emphasis added).

Applicants assert that Matsumoto fails to disclose, teach or suggest each of the emphasized steps of claim 1. Specifically, Matsumoto fails to disclose at least the step of "creating a plurality of holes *in the substrate*." (Emphasis added), because such a "hole in a substrate" does not appear to exist in Matsumoto's disclosure. Applicants note that the emphasized limitation "creating a plurality of holes *in the substrate*" has not been added in the current amendment as it was added in a previous amendment.

Thus, irrespective of Applicants' current amendment to claim 1, Applicants' submit that at least this step has not been disclosed in Matsumoto.

Currently amended claim 1 additionally recites that the plurality of holes "extends through the substrate from a major surface thereof into a respective one of the lcmds." This limitation is not disclosed or suggested by Matsumoto.

Furthermore, Applicants assert that Matsumoto does not provide any suggestion to combine the functional or operational aspects of Matsumoto's invention with Applicants' Prior Art Figure 1. The lack of motivation or suggestion to make the proposed combination is noted in the Office Action statement "Matsumoto does not appear to specify that the apparatus is for micro displays." Traditional methods for manufacturing micro displays have been described in Applicants' background of the invention. Matsumoto does not appear to address the issue of manufacturing multiple micro displays and Applicant's submit that the Office Action does not provide a proper reason or motivation for one of ordinary art to modify Matsumoto for the manufacture of multiple micro displays.

Even if the proposed combination of Matsumoto and Applicants' Prior Art Figure 1 is proper, attention is drawn to Applicants' disclosure (Background of the invention page 2, lines 5-6), which states "Traditionally, the wall 11 does not completely surround each IC 12 – *a small gap* 13 remains through which the liquid crystal material flows to fill the lcmd" (Emphasis added). Applicants' disclosure on page 2, lines 22-23 then teaches away from the use of such a traditional approach; by stating "The scribe and break process results in small debris of semiconductor and glass material that accumulate around lcmd openings 13." Consequently, Applicants' description teaches away from the proposed combination of Matsumoto and Applicants' prior art.

In view of the amendment, Applicants respectfully assert that rejection of claim 1 under 35 U.S.C. 103(a) is improper. Accordingly Applicants request that the rejection of claim 1 be withdrawn.

Claims 2, 3, and 8

Claims 2, 3, and 8 have been rejected under 35 U.S.C. 103(a) as being unpatentable over Matsumoto (U.S. Patent No. 6,445,436 B1) and Applicants' Prior Art Figure 1 in further view of Takiar (U.S. Patent No. 6,177,288 B1). Applicants' traverse the rejection of claims 2, 3, and 8.

Since independent claim 1 is allowable over the prior references of record, then dependent claims 2, 3, and 8 are allowable as a matter of law, because each of these claims includes all the steps of independent claim 1. *In re Fine*, 837 F.2d 1071 (Fed. Cir. 1988).

Dependent claims 2, 3, and 8 are further allowable for at least the following reasons.

The Office Action states, in pertinent part, that "Matsumoto does not appear to have the step of testing a plurality of lcmds after sealing a plurality of holes..." and "however, Takiar has the steps of testing a plurality of chip scale packages..." Applicants submit that Takiar's step of testing is applicable to producing and electrically testing conventional electronic circuitry. However, Takiar does not disclose, teach, or suggest a method of manufacturing and testing an optical device, such as Applicant's lcmd. Furthermore, Takiar does not expressly or impliedly suggest at least the Applicants' step of "testing said *plurality of lcmds*" (Emphasis added). Consequently, Applicants assert that the Office Action rejection of claims 2, 3, and 8 under 35 U.S.C. 103(a) is improper because the cited combination of references do not expressly or impliedly suggest all of Applicants invention.

Applicants also assert that there is no teaching in the cited references to suggest to one of ordinary skill in the art a reason to combine the cited references to arrive at the Applicants invention. The Office Action fails to establish a *prima facie* case of obviousness and does not provide a reason to combine Takiar with Matsumoto and Applicants' Prior Art Figure 1.

Applicants respectfully assert that rejection of claims 2, 3, and 8 under 35 U.S.C. 103(a) is improper. Accordingly Applicants request allowance of claims 2, 3, and 8.

Claim 9, 10, and 13

Claims 9, 10, and 13 have been rejected under 35 U.S.C. 103(a) as being unpatentable over Matsumoto (U.S. Patent No. 6,445,436 B1) and Applicants' Prior Art Figure 1 in further view of Takiar (U.S. Patent No. 6,177,288 B1). Applicants' traverse the rejection of claims 9, 10, and 13.

Independent claim 9, which is a method of manufacturing a plurality of lcmds, and dependent claims 10 and 13, have been rejected as Takiar apparently discloses "[t]his allows all of the packages assembled on the panel to be easily and accurately tested under a test head." Applicants submit that Takiar reference to "packages"

relates to integrated circuit packages, and Takiar's step of testing under a test head is applicable to electrically testing conventional electronic circuitry. However, Takiar does not disclose, teach, or suggest a method of manufacturing and testing an optical device, such as Applicant's lcmd. Furthermore, Takiar does not expressly or impliedly suggest at least the Applicants' step of "testing said *plurality of lcmds while they are connected to each other*" (Emphasis added). Consequently, Applicants assert that the Office Action rejection of claims 2, 3, and 8 under 35 U.S.C. 103(a) is improper because the cited combination of references do not expressly or impliedly suggest all of Applicants invention.

Furthermore, the Office Action fails to establish a *prima facie* case of obviousness and does not provide a reason to combine Takiar with Matsumoto and Applicants' Prior Art Figure 1.

Applicants respectfully assert that rejection of claims 2, 3, and 8 under 35 U.S.C. 103(a) is improper. Consequently, Applicants traverse the rejection of claims 9, 10, and 13 and request allowance of claims 9, 10, and 13.

Claim 14

Claim 14 has been rejected under 35 U.S.C. 103(a) as being unpatentable over Matsumoto (U.S. Patent No. 6,445,436B1) in view of Applicants' Prior Art Figure 1. Applicants traverse the rejection of claim 14.

For convenience of analysis, Applicants' independent claim 1 is repeated below in its entirety.

14. (Currently Amended) A liquid crystal micro display (lcmd) assembly comprising:

a first substrate of the lcmb assembly;

a second substrate of the lcmb assembly, the second substrate having a pair of opposed major surfaces and comprising a hole extending through the second substrate between the major surfaces; having a plurality of sealed holes extending through a thickness thereof, wherein each of the plurality of sealed holes corresponds to one of a plurality of lcmb;

liquid crystal material that is located between the first substrate and the second substrate of the lcmb assembly. and within the plurality of lcmb.

(Emphasis added)

Independent claim 14 has been rejected, as the Office Action states, in relevant part, because "Matsumoto has a plurality of sealed holes wherein each of the plurality of sealed holes corresponds to one of a plurality of liquid crystal panels and liquid crystal material located between substrates within the plurality of liquid crystal panels (Col. 1, Lines 56-67). Matsumoto does not specify lcmb;"

Currently amended claim 14 recites “a hole extending through the second substrate between the major surfaces.” This limitation is not disclosed or suggested by Matsumoto. Consequently, Applicants assert that the Office Action rejection of claim 14 under 35 U.S.C. 103(a) is improper because the cited combination of references do not expressly or impliedly suggest all of Applicants invention.

Furthermore, Applicants assert that Matsumoto does not provide any suggestion to combine the functional or operational aspects of Matsumoto’s invention with Applicants’ Prior Art Figure 1. The lack of motivation or suggestion to make the proposed combination is noted in the Office Action statement “Matsumoto does not specify lcmands;” Applicant’s submit that the Office Action fails to establish a *prima facie* case of obviousness and does not provide a proper reason or motivation for one of ordinary skill in the art to modify Matsumoto for the manufacture of multiple micro displays.

Applicants respectfully assert that rejection of claim 14 under 35 U.S.C. 103(a) is improper. Accordingly Applicants request that the rejection of claim 14 be withdrawn.

Claims 15-18

Claims 15-18 have been rejected under 35 U.S.C. 103(a) as being unpatentable over Matsumoto (U.S. Patent No. 6,445,436B1) in view of Applicants’ Prior Art Figure 1. Since independent claim 14 is allowable over the prior references of record, then dependent claims 15-18 are allowable as a matter of law, because each of these claims includes all the steps of independent claim 1. *In re Fine*, 837 F.2d 1071 (Fed. Cir. 1988).

Dependent claims 15 -18 are further allowable for at least the following reasons.

Matsumoto does not disclose a lcmand assembly of the Applicants invention. This is noted in the Office Action that states, in pertinent part, that “Matsumoto does not appear to specify lcmands.” Consequently, Applicants assert that the Office Action rejection of claims 15-18 under 35 U.S.C. 103(a) are improper because the cited combination of references do not expressly or impliedly suggest all of Applicants invention.

The Office Action further states, in relevant part that “It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Matsumoto in view of Prior Art Figure 1” On the contrary, Applicants’ disclosure on page 2, lines 22-23 teaches away from the use of a traditional approach as shown in Prior Art Figure 1, by stating “The scribe and break process results in

small debris of semiconductor and glass material that accumulate around lcmd openings 13." Consequently, Applicants' background description teaches away from the proposed combination of Applicants' prior art Figure 1 and Matsumoto.

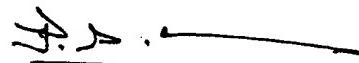
Applicants submit that the Office Action fails to establish a *prima facie* case of obviousness and does not provide a proper reason or motivation for one of ordinary skill in the art to modify Matsumoto in view of Prior Art Figure 1.

Applicants respectfully assert that rejection of claims 15-18 under 35 U.S.C. 103(a) is improper. Consequently, Applicants traverse the rejection of claims 15-18 and request allowance of claims 15-18.

CONCLUSION

In light of at least the reasons set forth above, Applicants respectfully submit that all rejections have been traversed, rendered moot, and/or accommodated, and that the now pending claims 1-18 are in condition for allowance. Favorable reconsideration and allowance of the present application and all pending claims are hereby courteously requested. If, in the opinion of the Examiner, a telephone conference would expedite the examination of this matter, the Examiner is invited to call the undersigned Agent at (770) 933-9500.

Respectfully submitted,



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